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Davis

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[54] ION STORAGE DEVICE Stephen C. Davis, Fen Ditton, Inventor: England

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ABSTRACT

An ion-storage device has an electrode structure for subjecting ions in a defined region along a path P to an electrostatic retarding field.

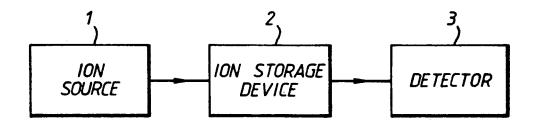
The electrostatic retarding field is in the form of an electrostatic quadrupole field. Ions enter the defined region at a position P1 on the path and they exit the defined region at a position P2, having travelled a distance x_T. Ions are subjected to the electrostatic retarding field during an initial part only of a preset time interval and the velocity of each ion during that part of the preset time interval is related linearly to its separation x from the exit position P2 by the expression,

$$v = k \left(\frac{q}{m}\right)^{\frac{1}{2}} \left(\frac{x}{x_T}\right)$$

where m is the mass of the ion, q is its charge and k is a

Ions having the same mass-to-charge ratio (m/q) all exit the field region at the same time during the remaining part of the preset time interval.

17 Claims, 3 Drawing Sheets



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